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The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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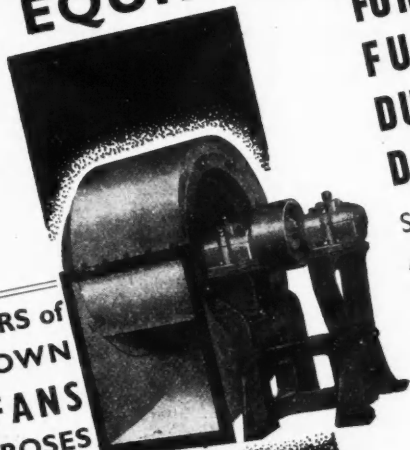
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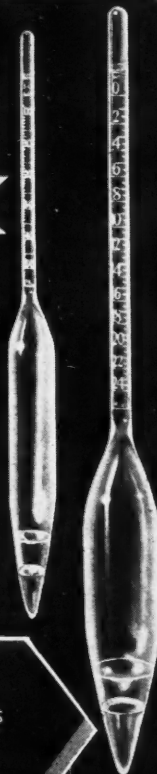
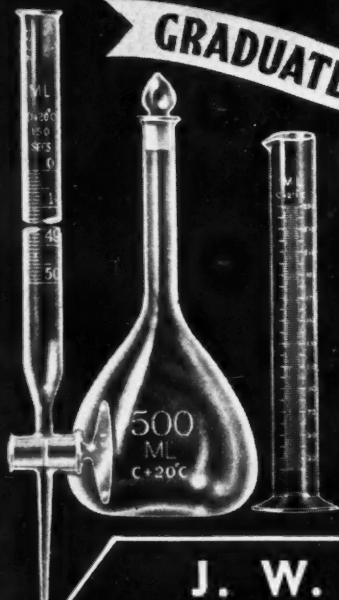
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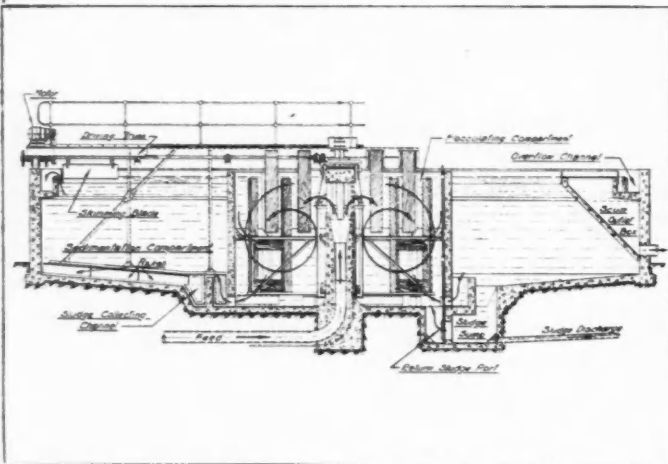
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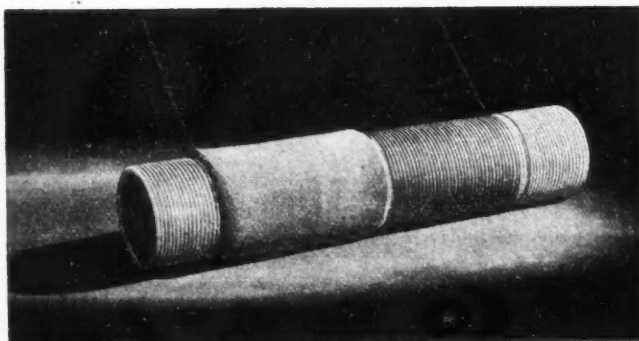
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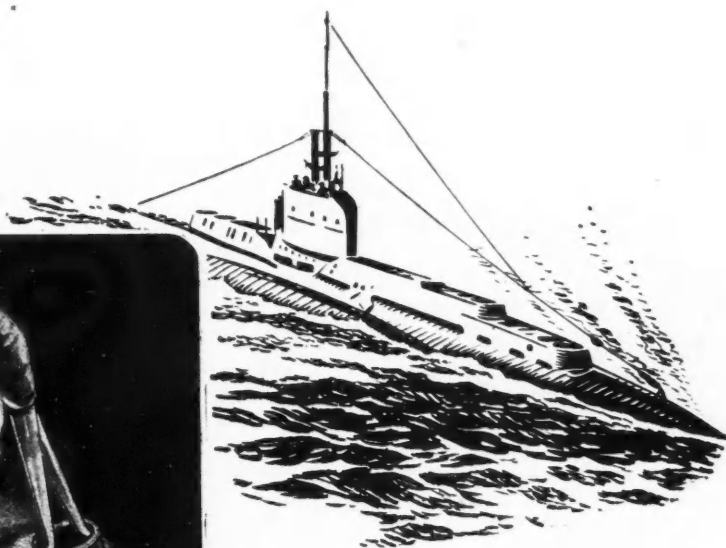
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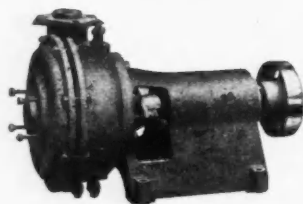
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Cooling Towers

THERE are many industries in which heat, when generated, must be removed again as part of the process. Sometimes the excess of heat is very considerable. Gases and liquids are frequently cooled by water, and this water must be subsequently re-cooled in order that it can be used again, since the expense of fresh water is often large. Fundamentally, the economic problem depends upon the cost of fresh cold water. If a works is near a river or lake, fresh cold water can be taken in for the bare cost of pumping, and the hot water can be returned to the stream. Artificial simulation of these conditions is typified by water coolers of the spray-pond type and of the open type which depend mainly on the natural force of the wind for circulating the air over the cooling surface. Where ground space is important or where a suitable pond is not available or cannot be built, recourse must be had to cooling towers, either of the chimney-draught or the forced-draught type.

Mr. W. K. Hutchison and Dr. Spivey have been conducting an elaborate investigation for the Gas Light and Coke Company on the design and performance of cooling towers of the chimney- and forced-draught types, and embodied their findings in a useful paper read at a joint meeting of the Institution of Chemical Engineers and the Chemical Engineering Group. The authors found that performance of towers would be improved by the substitution of smooth boards on edge for the triangular bars commonly used; this type of packing gave a closer approach to the wet-bulb temperature with a considerable saving in size.

The performance of a tower is expressed by the authors as the product K_{sa} where K_s is the overall mass-transfer coefficient and a is the effective wetted surface per unit volume of the packed space, the product being referred to as the volume coefficient of mass transfer. By considering the theoretical principles of cooling-tower design *ab initio* and experimenting in a semi-scale model forced-draught cooling tower the authors have been able to raise the K_{sa} figures from values of the order of 600-1100 (in chimney-draught cooling towers) or 1000-2170 (in forced-draught cooling towers) up to 4000-5500. This evidently represents no mean achievement with so old and well-established a type of plant and indicates the value of chemical engineering research. The authors have further shown that it is practicable to approach within 1° - 4° F. of the wet-bulb temperature in towers of moderate size with fan-power consumptions which do not represent any considerable charge on the cost of the re-cooled water.

It is an interesting fact that some 20 times as great an area per cu. ft. of packed space is used in other types of scrubbing operations as compared with cooling towers. Admittedly, there must be lower pressure drops in cooling towers, but the maximum resistance of these towers is within the range of packings which offer much larger surfaces per cu. ft. It would seem that, as Dr. Lessing suggested, for adequate cooling films are desirable. The authors might well investigate the economics of towers containing much greater surfaces per unit volume. The efficiency of a cooling tower depends greatly on uniform distribution of the water over the surface. This, in turn, depends on construction, as in the distribution of water over the troughs, the maintenance of levels, and so forth. It also depends on the quantity of water to be cooled. If a flow of water inadequate to the size of the cooling tower is maintained, the distribution will also be inadequate and the operation inefficient. Where the flow of water is variable, either a number of smaller towers should be used so that each tower is fully loaded in use, or the single large tower should be divided into compartments. The maximum degree of uniformity of distribution over the wetted surface was found by Hutchison and Spivey to be secured by a multiple-trough type of distribution. The authors' view appears to be that the important consideration is to obtain the maximum value of K_{sa} per h.p. expended, but they agreed that if work is to be done in getting air through the packing it is important that it should be employed in thinning the film.

The economics of the subject were not dealt with in this paper, but the authors have given fundamental data on which those interested must base their economic calculations for each particular process or local circumstance. Speaking of the economic angle, there is one word to be said: considerable ingenuity is being applied to dissipating heat in cooling towers, but the principle of dissipating heat is wrong. We believe that this country is on the verge of a drive for coal conservation, which will be increasingly forced upon us by the high price of coal if for no other reason. Chemical engineers should therefore study not so much how to dissipate heat as how to turn it to some useful purpose. In other countries and in two places in the British Isles the heat that would otherwise be dissipated in the exhaust steam from power stations is circulated through neighbouring dwellings in order to provide hot water and central heating. Much can be done within works in this direction. We put forward this thought for the serious consideration of chemical engineers.

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NOTES AND COMMENTS

A War-time Suspension

WE were sorry to read, on the title-page of the October-December, 1941, issue of the *Ontario Research Foundation Bulletin*, which has just reached us, that this is to be the last issue for the duration of the War. Dr. H. B. Speakman, Director of the Institute, explains that he and his colleagues feel they must conserve their resources, especially in time, but looks forward to a renewal of contacts with fellow-workers in research and industry. We most heartily echo their sentiments; the *O.R.F. Bulletin* has been a model of the sort of publication that a research institute ought to issue. The articles it contains have always been clearly and succinctly written and have covered a wide variety of scientific interests. In many ways this last number (for the time being) is one of the best; its four articles—well-illustrated as usual—deal with Moulds, Leather, Solvents, and X-rays. There can be few workers in the chemical industries who would not find something of value in one or other of the subjects dealt with; and working scientists will be the poorer for the suspension of this informative quarterly. Let us hope that the thread of intercommunication thus severed will speedily be picked up again.

Inside Latin America

THE publication of a new book by the author of the two best-sellers, *Inside Europe* and *Inside Asia*, is an event of importance to British firms at a moment when information on foreign markets is very scanty. Mr. Gunther's *Inside Latin America* (Hamish Hamilton, 12s. 6d.) gives a detailed political and economic survey, made as recently as last summer, which should be read by all who care for the future, whether from the standpoint of trade or the wider standpoint of world politics. For the first time in history, twenty countries, comprising 120 million people, are now virtually allied to the United States, not only for defence purposes against the Axis, but for closer trade and cultural relations. As the U.S.A. is Britain's most powerful ally, the significance of this union with Latin America is obvious. Present developments point towards still closer economic relations, as Latin American trade is now almost entirely with the U.K. and the U.S.A. owing to the closing of the European market. Even in 1931, the year of the British Exhibition in Buenos Aires, when Anglo-American trade rivalry in Latin America was acute, many British and American firms were working together in these markets to their mutual advantage. This was largely the result of the cordial personal relations that existed between British and American business men resident in these countries. Everything possible

should now be done to promote this co-operation still further, and there is hope of great things to come in the new agreement between the British and American Governments announced in the House of Commons on Tuesday. During the war, the best use must be made of the raw materials of all kinds in which Latin America abounds. The restriction of supplies from the East Indies gives added importance to this alternative source of supply of rubber, quinine, hemp, and tin. After the war, the responsibility of the victors for feeding Europe will be greatly facilitated if the British and American Governments jointly acquire the Argentine grain crop, to mention one example. At present, owing to the war, the crop is largely unsaleable and is a grave problem to the Argentine authorities. This co-operation might impose certain broad limitations, e.g., if Britain had priority in the conduct and maintenance of the Argentine railways (already mainly British-owned), the U.S.A. might then have first claim on the electrical trade. But so vast are the potentialities of Latin America, which in this respect resembles the United States in the middle of the last century, that there will be ample trade for both British and American firms in many industries for many years to come. Hence to keep abreast of Latin American affairs, and to maintain goodwill in these markets, is the duty of every manufacturer who takes a far-sighted view of British overseas trade.

Nylon and the Molecular Still

PROBABLY no new chemical product developed during recent years has struck the public imagination to the same extent as nylon. The story of the evolution of nylon has been often told already, so far as concerns its general outline; but a more detailed description, lately given by Dr. E. K. Bolton, Du Pont's chemical director, on the occasion of the presentation to him of the Chemical Industry Medal of the Society of Chemical Industry, brings out some interesting facts that may have been passed over in the general excitement. One particular sidelight that should be of special interest to readers of *THE CHEMICAL AGE* is the part played in the development of nylon by molecular distillation. We have devoted considerable space recently to the application of this process to the chemical industries, and here is another case in point. Some two years after Dr. W. K. Carothers had begun his investigations into the production of a new synthetic fibre for Du Ponts, working on polycondensation involving the reaction of difunctional molecules (dibasic acids and glycols), he obtained polymeric esters of molecular weights up to 5000. But perhaps the most significant advance in his preparation of polyesters was achieved through the use of the molecular still. This tool made it possible to carry polymerisation more nearly to completion by the elimination of water formed by the condensation reaction. The molecular still proved to be a valuable tool in obtaining products of higher molecular weight than were heretofore attainable with ordinary vacuum distillation equipment. Without this technique Carothers might have failed in his search for superpolymers. By placing the polymeric esters having molecular weights up to 5000 in the molecular still, and heating by means of a bath at 200° C. for twelve days, Carothers and his associates were able to increase the molecular weights substantially, obtaining values from above 10,000 to 25,000. At this time he applied the term "superpolymer" to materials having a molecular weight of 10,000 or higher. The progress of research on these superpolymers from then on is well known. Mixed polyester-polyamides were developed, and finally in 1935 the superpolymer from hexamethylene diamine and adipic acid was synthesised. Cold-drawn fibres of this polyamide had the requisite elasticity and tensile strength and, most important of all, the relatively high melting point of 263° C. Commercial textile conditions were satisfied and it only remained to develop the process on a sufficiently large scale. That in itself is a romance of industry, but the story has been told elsewhere; but it may be said that, but for the intervention of the molecular still, this point would never have been reached and nylon might still have been only an industrial chemist's dream.

Bled Steam for Chemical Processing Importance of Economic Engine Design

by H. SEYMOUR

THERE are many advantages to be derived from bled steam for heating, and the economies of employing used steam from the power plant have often been stressed. It is impossible, however, to over-emphasise these economies, particularly for chemical plants where large quantities of heat are required. When it is remembered that, owing to the latent heat of steam, to produce saturated steam at 30 lb. absolute pressure from feed water at 15° C. requires 1173.5 B.Th.U. per lb., and that to raise this saturated steam to a pressure of 200 lb. absolute requires the addition of only 38 B.Th.U., it will be appreciated how wasteful it is to raise steam separately for power and also for heat. The saturated steam, if at 200 lb. pressure, when expanded in a turbine to 30 lb. for heating, will give up no less than 143.2 B.Th.U. per lb. of steam before it reaches the required steam pressure, and these heat units, assuming a conversion efficiency of 65 per cent., will give 1 kWh for every 37 lb. of steam passed out for process work.

If a hypothetical case is taken of a chemical plant requiring 50,000 lb. of steam per hour at 30 lb./sq. in. pressure, and a boiler efficiency of 70 per cent., a feed-water temperature of 38° C., and coal having a calorific value of 11,000 B.Th.U. per lb., then the actual evaporation will be 7 lb. of steam per lb. of coal, and the total coal consumption per hour will be 3.19 tons. If instead of generating the steam at 30 lb./sq. in. absolute, the heat reception is continued until steam at 200 lb. absolute pressure and a superheat of 93° C. is obtained, and this steam is allowed to do useful work while expanding down to the desired pressure of 30 lb./sq. in., then assuming the same conditions as those given above, the actual evaporation per lb. of coal will be 6.16 lb. of steam. The total coal consumption will thus be 3.62 tons, an increase of 0.43 tons, by means of which we obtain a total heat release of 8,500,000 B.Th.U. from the 50,000 lb. of steam; these heat units will produce 1600 kW of electric current. Assuming that the works produced high-pressure turbines exhausting at 28 in. vacuum, the steam consumption would be 13.7 lb. per kWh, making a total steam quantity of 22,000 lb., and a coal consumption of 1.59 tons per hour.

Summarising the above argument, we thus have the following comparative results, under similar boiler-house conditions and boiler and turbine efficiencies: (1) If obtained separately, coal consumptions are 1.59 tons and 3.19 tons for power output and for steam output respectively, making a total coal consumption of 4.78 tons. (2) If obtained through a pass-out turbine, the coal consumptions are 3.19 tons and 0.43 tons for steam output and for power output respectively, making a total coal consumption of 3.62 tons. It will thus be seen that a saving of 24 per cent. in coal consumption has been effected, which is a matter of considerable importance, e.g., in breweries where both power and heat are required.

Variable-Speed Engines

There are various types of plant arranged for exhaust or pass-out steam supply. One of these is a variable-speed steam engine of the central-valve, non-compound, forced-lubricated type, with metallic packings throughout. It develops a maximum power of 240 b.h.p. at 366 r.p.m. when supplied with steam at a pressure of 150 lb./sq. in. and a total temperature of 250° C., exhausting to a back pressure of 32 lb./sq. in. Its normal output is 200 b.h.p. at 366 r.p.m., but it can be run at any speed between 366 and 50 r.p.m.; this, it will be observed, is an unusually large variation. The special feature of these engines is the speed control governor. Speed variation is obtained by means of a handwheel on a horizontal compression spring situated at the end of the governor shaft. As this spring is compressed by turning the handwheel,

it sets through toggles in such a way as to reduce the effectiveness of the main governor springs. Hence, the speed is reduced. Fine adjustments are made by means of the small spring-loaded wheel on the throttle spindle. The engine may thus be set to run at any intermediate speed between the maximum and minimum, and in all positions a close regulation is maintained. In addition to the speed control, engines of this type are fitted with expansion gear control whereby the main valve is automatically adjusted to an early or late cut-off position according to whether the engine is running on full or partial load. This control is also operated from the centrifugal governor, ample power being available for the purpose with small variations of speed by utilising the oil pressure in the lubrication system.

A slight rise of engine speed owing to reduced load causes the governor weights to move outwards, so opening a valve which admits oil under pressure to a piston, driving it to the end of a cylinder. A system of levers connects this piston to the expansion valve so that the latter is placed in the "early" cut-off position, where it remains until an increase of load causes a slight diminution in speed. As soon as this occurs the governor weights move inwards again, oil pressure is removed from the piston, which now returns to its original position by the action of a spring. Thus the main valve is once more given a "late" cut-off which is maintained until a diminution of load causes the sequence of events to be repeated.

Special Valve Design

In the larger sizes of compound engines, where low steam consumption at many different loads is an important consideration, the valve gear of the high-pressure cylinder in some designs is equipped with a special arrangement for altering the cut-off of the valve, controlled either by hand or by the movement of the governor as the case may be. When controlled by the governor it operates by altering the cut-off at the heavier loads, but goes out of action as the load is reduced, leaving the control to the closing of the throttle valve at the lightest loads.

Exhausting against back pressure does not, as a rule, call for any modification of standard designs; this fact, taken in conjunction with imperfect thermodynamic knowledge, has led to many uneconomical schemes being put forward by inexperienced people. Conditions where the exhaust steam at any period is in excess of the process demand may lead to excessive waste, and such cases call for a different type of engine to obtain the best results. A type which meets these varied conditions admirably is the compound or triple-expansion pass-out engine.

The provision of an efficient pass-out control gear is a matter of vital importance. This gear ensures that until the maximum pass-out quantity for which the engine is designed is reached, no more steam is allowed to pass the I.P. cylinder than is necessary to keep it warm; the maximum quantity of pass-out steam is automatically limited to the designed amount, but at every load and quantity a perfectly steady pressure is maintained in the pass-out receiver. Higher loads are dealt with by an over-riding action admitting additional steam to the L.P. cylinder, and when no steam is passed out the engine works as a purely nominal compound or triple-expansion type.

An important drawback to the use of exhaust steam from an engine is the presence in it of the lubricating oil supplied to the cylinders. In the past this has absolutely precluded the adoption of the system where steam is used in direct contact, and was against its use in other cases where the fouling of the surfaces by the oil

greatly reduced the effective transmission of heat. Nearly 30 years ago the first engine operating entirely without any cylinder lubrication was set to work. This unit was quite successful and was the forerunner of a large number on exactly similar lines; the wear is only slightly greater than with lubrication, and the extra cost of renewals is much more than compensated for by the saving in the cost of cylinder lubricating oil.

The tandem piston drop-valve engine is well suited for the withdrawal of process steam between the cylinders, and the steam inlet valves are fitted with special gear so that the compression of the dashpot springs is constant for any position of the steam inlet valves. This feature is important, particularly when the steam is being cut off early in the stroke, as, in the case of an extraction engine meeting the maximum demand for process steam, the steam inlet valves in the L.P. cylinder will be closing at the point of maximum cut-off. This gear will ensure that the steam is promptly cut off, and prevents the valves from dwelling on the port edges.

The L.P. valve gear is controlled by a regulator working on the relay principle and governed by the steam pressure in the process main. The action of this regulator is powerful and quick, maintaining the valve gear in the position most suitable for the amount of process steam required. Admission of high-pressure steam is in charge of a highly sensitive isochronous governor which keeps the engine running at constant speed, and looks after its needs of power and process steam.

A Simple Turbo-Generator

Among turbine equipment employed for exhaust steam use, one of most popular types is the self-contained turbo-generator, which has the virtues of simplicity, efficiency, and reliability. The turbine exhaust and condenser shell are integral, an important feature in that overall height is reduced and the set may be accommodated at floor level. The conventional position of the turbine is reversed, the exhaust being at the outboard end of the turbine; this results in compact design, permitting the incorporation of an improved method of support to allow for expansion. Very careful attention has been devoted to this arrangement, to ensure that the accuracy of alignment of the set is maintained with changes of temperature. Another important feature is the gear arrangement, in which the turbine pinion is vertically above the low-speed gear wheel, thus reducing the overall width of the set and contributing to the one-floor construction of the plant.

Both turbine and condenser are supported at one end from a gear box designed for the purpose, and at the outboard end by a flexible support bolted to feet provided on the condenser casing. Low-speed gear shaft and generator are normally coupled together by a solid coupling, the generator shaft being extended for the drive of the circulating water pump. The extraction pump on the smaller sizes is driven from the turbine spindle, and on the larger sizes from the low-speed gear shaft. It is hardly necessary to point out that the foundation for such a set is cheap and easy to construct; all that is required is a shallow concrete plinth in which is incorporated a steel girder framework, and a small pit to accommodate the oil tank and condensate extraction pump; the framework forms a bed for the turbo-generator. These turbines are designed for a speed of 5000 r.p.m. for the larger outputs, and 6000 and 7500 r.p.m. for medium and small outputs; they are of the impulse type, so that there is no need for small clearances between the fixed and moving blades in order to obtain high efficiency. They normally contain one velocity compounded stage followed by a number of single-impulse stages. After passing through nozzle control valves the steam is expanded through nozzles, in which the potential energy of the steam in the form of pressure and superheat is converted into velocity or kinetic energy.

In conclusion, it may be stated that the economic advantages of installing process steam plant are almost too obvious to require stressing, yet there are undoubtedly many places where it could be used with very consider-

able advantage. There is a lot to be said in favour of having a power supply independent of outside sources, particularly in these days when the danger of air attack on large central power stations must be taken into account. That is only one aspect of a very important problem, but undoubtedly by far the most important consideration in practically every case is the reduction of manufacturing costs; that this can be achieved by means of pass-out steam equipment has been proved time and time again.

Coke and the Chemical Industry

Water-Gas as a Primary Material

IN the remarkably interesting paper by Mr. J. G. Bennett, director of the British Coal Utilisation Research Association, presented to the Institute of Fuel at the Royal Victoria Station Hotel, Sheffield, last Wednesday, the subject under discussion was "The Future of Coke." Coke accounts for 62.3 per cent. of the energy produced from coal, or 7594 megatherms out of a total of 12,148 (1937 figures). Its main uses, for blast furnaces, iron foundries, and other industrial purposes, and for domestic heating, are well known, though somewhat outside the scope of this journal, and Mr. Bennett gave a brilliant résumé of its present and probable future economic position. One form of coke utilisation directly concerns the chemical industry, notably the organic chemical industry, the wider development of which we have been urging during recent months. This is the development of water-gas production in the complete gasification of coal (steam coal), with a theoretic thermal efficiency of 60 per cent., and a relatively effective figure of probably 55 per cent.

The production of water-gas, as Mr. Bennett said, is at present regarded as ancillary to carbonisation as a means of securing flexibility. Its future possibilities as a source of hydrogen and carbon monoxide for various synthetic processes are of great importance. This is an aspect of complete gasification which is rather different from others already considered. Here it is not the production of a gaseous fuel that is under investigation so much as raw materials of chemical industry. Hydrogen, carbon monoxide, and methane, in the hands of the high-pressure chemist, become sources of raw materials of the aliphatic chemical industry, the potentialities of which can scarcely yet be envisaged. The time is coming when the petroleum resources of the world will reach the zenith of their development and a policy of conservation will impose itself on the oil-producing countries of the world. Oil prices will rise, and liquid fuels will be used only in applications which make the fullest use of their valuable characteristics. This is a situation that may begin to take shape within one or two decades. We shall, at the same time, see an increasing demand for the production from coal of oil substitutes and of alternative raw materials for chemical industry. In these developments water-gas has a great part to play and this, in turn, will create a special demand for coke, the extent of which it is impossible to forecast.

HIGH-FREQUENCIES IN OIL REFINING

The use of high-frequency discharge in the treatment of hydrocarbons is covered by a patent issued to Eric W. Luster, of Westfield, N.J., and assigned to Standard Oil. An old process called "Voltolisation" has been used. In this process, electrodes that carry the current into and out of the material are placed close together and frequencies below 10,000 are used. Luster now finds that when frequencies above 600 megacycles are used, even with one electrode, or with no electrodes but a ring coil, "startling and unexpected advantages result," and that dehydrogenation, polymerisation, and other chemical reactions can be produced. An advantage of the method is that lower voltages can be used, thus diminishing the insulation and lowering initial and operating costs, and also reducing the danger of sparkover.

Fluorescence Measurement

The Spekker Photo-Electric Fluorimeter

A USEFUL means of chemical analysis consists of the measurement of the intensity of the fluorescence produced in a solution under controlled conditions of illumination. Such measurements are specific for an important range of substances of interest to biochemists, pathologists, analysts, food chemists and others. The Spekker Fluorimeter has been specially designed for this type of work and makes measurements by photo-electric means which eliminate the personal element. It only requires connection to A.C. mains and is self-compensating for variations of line voltage.

Uses of the Fluorimeter

This instrument has already been found of considerable use for the estimation of Vitamins B₁ and B₂. Vitamin B₁ is first oxidised by potassium ferricyanide to thiochrome, which is extracted by *isobutyl* alcohol and transferred to the fluorimeter cell for estimation. Thiochrome has a violet fluorescence which permits this estimation in quantities down to less than 1 microgram. This estimation by the Spekker fluorimeter has been described in the *Analyst* (January 15, 1942).

Vitamin B₂ has a bright green fluorescence in aqueous solution and can be estimated without chemical transformation. It is desirable, however, in both the above cases to remove other materials which would influence the measurements; but even when their removal is incomplete it is possible to correct for their effect by methods fully described in the literature.

Vitamins B₁ and B₂ have been mentioned at length as being substances that are receiving considerable attention at the moment. There is, however, a wide range of usefulness for the photoelectric fluorimeter both in research and industry. It may be used for estimation of various organic materials, for example the determination of quinine in blood and for estimation of oils in waste products and in soil extracts, for determination of pH and titration end-points by means of fluorescent indicators, and for the estimation of metals, etc.

Description of the Instrument

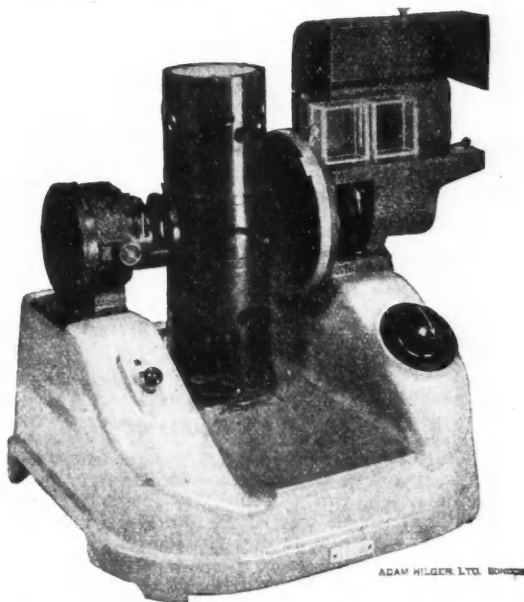
The Spekker fluorimeter has been developed from the Spekker absorptiometer and, like it, makes use of a null method with an optical-mechanical measuring system of simplicity and precision. It is independent of fluctuations in the line voltage applied to the light source, and of deviations from linearity in the response of the photo-cells and galvanometer circuit.

The source of ultra-violet light is a compact mercury vapour discharge lamp, used in conjunction with a Wood's glass filter. Light from it follows two paths simultaneously. The one leads directly to a compensating photo-cell. The other passes through a calibrated variable aperture and into the cell containing the fluorescent solution. A second photo-electric cell is situated close to the solution cell and receives the fluorescence only. Scattered radiation is eliminated by a special filter fixed in front of the photo-cell, which is not in the direct path of the ultra-violet light. The two photo-cells are connected differently with a sensitive galvanometer. The one employed is sensitive, robust, and relatively free from disturbances from moderate vibration. It is used in conjunction with a lamp and scale and requires a path-length of two metres.

Two similar solution cells are accommodated upon a sliding carriage so that either may be inserted in the position of measurement. Each cell has a capacity of approximately 18 c.c. One cell is filled with a strictly reproducible standard solution, the other with the liquid to be determined.

The method of measurement is very similar to that used in the Spekker absorptiometer. The instrument must first be calibrated with several solutions of known concentrations for each type of reaction or test; once this has been

done it need only be checked at long intervals. As in the Spekker absorptiometer, the instrument reading is only dependent upon the accuracy of calibration of the variable aperture. The simple and robust design of this part of the instrument ensures the maintenance of the instru-



The Spekker Photo-Electric Fluorimeter, developed from the Spekker Absorptiometer

ment's accuracy. By interposing selected colour filters between the solution and the photo-cell the effects of impurities, or other constituents of the solution, which have fluorescence of different colour may often be eliminated.

Conversion to an Absorptiometer

The fluorimeter is so designed that it may very quickly be converted to a Spekker absorptiometer, when it may be used for estimation of coloured solution. It is then of wide use in any chemical or biochemical laboratory.

Test Code for Gas Producers

New British Standard

THE British Standards Institution has issued a new Test Code for Gas Producers (B.S. 995), following the form of the other codes issued by the Institution for Fuel Consuming Plant.

It is realised that the comprehensive code would be too full for the purpose of checking guarantees and this point has been covered by an appendix giving notes on guarantee tests which are intended for the purpose of checking guarantees between contracting parties in the construction of a new plant.

The comprehensive code has been drafted to evaluate the efficiency and/or performance and/or output of a producer, and its object is to indicate to those carrying out the tests the method that should be adopted and the data that should be obtained. It excludes reference to data which are not essential to a complete analysis and evaluation of the operation of the oven or producer concerned. Copies of B.S. 995 may be obtained from the Institution at 28 Victoria Street, London, S.W.1, price 3s. 9d. post free.

Silver for Chemical Plant

Tests with Corrosive Liquids

THE advantages of silver as a material for the fabrication of chemical plant are discussed by Allison Butts, Professor of Electrometallurgy at Lehigh University, and John Giacobbe, American Silver Producers' Research Fellow, in *Chem. and Met. Eng.* (1941, 48, 12, p. 76). They point out that this metal has important uses in the manufacture of certain highly corrosive chemicals, where equipment made of other metals would have a short life. With silver at its present comparatively low price—in America it stands at \$5.06 per lb.—silver-made chemical equipment becomes an economic possibility, especially when it is recollected that between 50 and 75 per cent. of the metal will be recoverable as scrap.

The authors carried out a large number of tests with various chemicals, and have tabulated their data in two different series, the first derived from refluxing tests, the second from immersion and evaporation tests. In both series the metal specimen under test was weighed before and after an initial period (usually 24 hours) of exposure to the corroding medium, then returned to the medium for further exposure and subsequent weighing. This was done because the rate of corrosion commonly slows up on continued exposure, and because the rate will be different initially from that in later periods when a protective film is formed. A few other metals were subjected to the same test conditions for comparison. These were nickel, monel, copper, aluminium, and 18-8 stainless steel.

Offsetting the Initial Cost

The main objection to the use of silver as a structural material being the high first cost, it is necessary to consider whether this can be offset by longer life, thus eliminating replacements or repairs, and by scrap value. In some cases cost can be greatly reduced by use of a coating instead of solid construction. When the coating is electroplated, it will ordinarily be of high purity. The silver used in the tests was high-purity sheet, 999.9 fine, 0.002 in. thick. In most cases use of silver of lower purity would have a negligible effect on the results.

It is pointed out that generalisation from specific corrosion tests must be limited. It is unwise to accept a favourable result as conclusive without further testing under conditions as far as possible duplicating the proposed use. A given amount of corrosion may in some cases be serious and in others not, according to the nature of the application and the purpose in view.

A much larger corrosion rate may be tolerated with other metals than silver, provided that the quality of the product under treatment is not affected. A rough division of the chemicals tested into those producing little or no attack and those causing considerable attack is given below with respect to silver; with respect to other metals such a division seems unwise because of the many factors involved and the limited scope of the tests. For silver a corrosion rate of 7.5 mdd. (mg. per dm.² per day), i.e., 0.001 in. per year, was taken as the division line between the two groups. This is, of course, arbitrary, and would be too high for electroplated material. Five of the liquids have not been placed in either class; most of these showed gains somewhat above 7.5 mdd. or losses only slightly below.

For silver, little or no corrosion was found in acetic acid (50 per cent.), aluminium chloride at room temperature, aluminium fluoride, aluminium sulphate, aminoazobenzene, barium chloride at room temperature, cadmium sulphate, calcium chloride (50 per cent. solution at 67° C.), calcium fluoride, citric acid, cresol, cupric nitrate, lactic acid, potassium chloride at room temperature, potassium chlorate, potassium bichromate, sodium aminobenzene sulphonate, sodium fluoride, and zinc sulphate.

Considerable attack on silver was found in aluminium chloride when evaporated, barium chloride when evaporated, liquid bromine, copper sulphate (20 per cent.), monochloroacetic acid (20 per cent.), phenoldisulphonic

acid, and potassium chloride when evaporated or when held at 100° C. (saturated solution).

Intermediate results were obtained for silver in calcium hypochlorite (saturated solution at room temperature), carbon tetrachloride, crotonaldehyde, commercial phosphoric acid (above 50 per cent.), and sodium chlorate.

Extinguishing Magnesium Fires

Granulated Pitch Method

THE U.S. Bureau of Mines, according to the Director, Dr. R. R. Sayers, has evolved new and more effective methods of extinguishing magnesium fires in commercial plants. They can also be applied to incendiary air bombs in war time. Hard coal-tar pitch in granulated or flaked form is a highly satisfactory substance for extinguishing a magnesium flame, Dr. Sayers states. When spread on a magnesium incendiary bomb or a small magnesium fire, the coal-tar pitch softens and forms an air-tight blanket which quickly smothers the flame. This method is regarded as superior to the use of sand and water or prepared compounds such as carbon tetrachloride, carbon dioxide and foam.

The hard coal-tar recommended by the Bureau of Mines is sometimes called "fuel pitch" and it can be made available through a number of commercial firms at reasonable cost. The granulated or flaked form is necessary because powdered pitch has explosive characteristics similar to those in coal and other dusts. This so-called hard pitch will soften at about 150° C., and is easy to handle and transport. For incendiary bomb protection in the home and office it is suggested that 25- or 50-lb. lots be stored in boxes or bags, with a long-handled scoop or shovel kept near by. In addition to its effectiveness in extinguishing small magnesium fires, the pitch method is distinctly advantageous in industrial plants because it is not abrasive and, unlike sand, is not likely to damage costly machinery.

The procedure described in an abstract of investigations entitled, "Methods of Extinguishing Fires and Incendiary Bombs with Very Hard Coal-Tar Pitch," by H. R. Brown, Irving Hartmann, and John Nagy. Copies of the abstract may be obtained from the Bureau of Mines, Department of the Interior, Washington, D.C.

A CHEMIST'S BOOKSHELF

LIVING LIGHT. By E. Newton Harvey. Princeton: Princeton University Press. London: Humphrey Milford. Pp. xv + 328 (illus.). 24s.

Much new material regarding luminescence has been published since the appearance, in 1920, of the author's earlier book, "The Nature of Living Light." The addition of this material and drastic rewriting have made "Living Light" a new work rather than a second edition.

At the present time luminescence is of considerable interest to chemists, and this interest has been reflected in the recent scientific Press. Mr. Harvey's book should serve admirably to give chemists a broader view of the relevant field. Written primarily from the point of view of the biologist, the book is reminiscent of the enviable days of the 17th and 18th centuries, when a natural philosopher was not merely a chemist or a zoologist, but allowed his interests to rove over the whole field of natural phenomena. The catholic approach is emphasised, and a moral is pointed by the quotations from Boyle, who, as "father of chemistry and brother to the Earl of Cork," tends too much to be regarded by chemists to-day with a proprietary eye.

"Living Light" is excellently written and the illustration shows the same high quality. It will probably surprise most chemists to be told (and that by a biologist) that there are no less than 17 categories of luminescence. Each of these is clearly, if briefly, described. The bibliography, which is very full, should be especially useful; and if the whole work has a pronounced biological bias, it should, nevertheless, prove profitable reading for those whose province lies in the physical sciences.

Personal Notes

COLONEL S. J. THOMPSON, governing director of Messrs. John Thompson, Ltd., of Wolverhampton, has been elected president of the Institution of Mechanical Engineers.

MR. H. S. GREGORY has been appointed Controller-General of the Trading with the Enemy Department, which is a joint department of the Treasury and the Board of Trade.

SIR JEREMIAH COLMAN, second baronet, has been elected chairman of the board of J. and J. Colman, Ltd., in place of the first baronet, of the same name, whose death was reported in THE CHEMICAL AGE of January 24.

MR. A. DODD, who has been appointed works manager of the tar distillation plant of the United Coke and Chemicals Co., Ltd., Whitehaven, was formerly chief chemist at the Workington Coke Ovens of the United Steel Companies, Ltd.

DR. CLEMENT HENRY BAMFORD has been awarded the Meldola Medal for 1941, and MR. GORDON ALFRED BAXANDALL, of University College, Leicester, has been granted the Sir Edward Frankland Medal and Prize by the Institute of Chemistry.

DR. PETER KAPITZA, director of the Institute for Physical Problems in the Moscow Academy of Sciences, and formerly of the Cavendish Laboratory, Cambridge, has been awarded the Faraday Medal of the Institution of Electrical Engineers for his notable contributions to science in the generation and utilisation of intense magnetic fields.

DR. THOMAS MIDGLEY, JR., has been awarded the Willard Gibbs Medal for 1941 by the Chicago Section of the American Chemical Society; the presentation will be made on May 22. Dr. Midgley's services to science have been mainly in the fields of fuels for internal combustion engines, of rubber, natural and synthetic, and of refrigerants. He was awarded the Priestley Medal of the A.C.S. in June last year.

MR. D. McMASTER, who in accordance with custom is the sole nominee for the office of President of the Royal Photographic Society, will succeed the retiring President, Mr. F. J. MORTIMER, at the Society's annual meeting on March 10. In assuming office, Mr. McMaster will be the first President of the Society who is not a British subject; he is an American citizen, and was educated at the University of Buffalo and Cornell University. He has for some time been a vice-president of the R.P.S.

MR. ARTHUR ROBINSON, managing director of Meade-King, Robinson and Co., Ltd., oil merchants, of London, Liverpool, etc., has been elected president of the Council of Seed, Oil, Cake, and General Produce Association of Liverpool. MR. R. P. SILCOCK, managing director of R. Silcock and Sons, Ltd., cattle-food manufacturers, is the new vice-president. MR. E. H. WHARTON-DAVIES, managing director of the Cattle-Food Supply Co., Ltd., re-elected treasurer, has completed 25 years in this office.

Obituary

DR. HAROLD JOHNSON, chief chemist of the Warner-Jenkinson Mfg. Co., St. Louis, Missouri, U.S.A., news of whose death on December 10 has just reached us, was born in Canterbury, England, in 1876, and was educated in this country and at Brussels University. His early years, as consulting chemist to the fermentation industries, were spent in the colonies, in India, and later in Canada. He joined the Warner-Jenkinson company in 1912, and during the last war began the development of coal-tar food dyes, which became his chief pre-occupation.

An addition of 520 names to the list of traders in neutral countries with whom it is unlawful to deal is contained in the Trading with the Enemy (Specified Persons) (Amendment) (No. 3 Order), 1942, which came into force on February 27.

Chemical Matters in Parliament

Rubber Reclaiming Plant

IN the House of Commons last week Mr. Parker asked the Minister of Supply what quantity of cast-iron, alloy and non-alloy steel had been allocated for the purpose of extending their plants since June, 1941, to those reclaiming firms who were and those who were not, members respectively of the Rubber Reclaimers' Association. Replying, Mr. Ascheton stated that it would not be in the public interest to publish particulars of the steel allocated for the extension of reclaiming plant.

British Chemical Prices

Market Reports

A STEADY movement into consumption is taking place in most sections of the industrial chemicals market and values throughout continue to display a strong tendency. Inquiries for new business during the past week have been on the active side although in some directions bookings have been restricted by scarcity of supplies. There have been no price changes of importance among the soda products, and a steady demand is reported, with offers of chlorate of soda finding a ready outlet. Yellow prussiate of soda and bichromate of soda are both in short supply, and this is the case with the majority of the potash compounds. There has been a good buying interest for formaldehyde and also for acetic and oxalic acids. Price conditions on the market for coal tar products have been fairly steady during the past week, and a moderate trade has been put through in all departments with the exception of, perhaps, the pyridines.

MANCHESTER.—The cotton and woollen textile and allied industries on the Manchester market have been calling for fair quantities of a wide range of chemical products during the past week, while most of the other consuming trades have fully maintained their requirements at about their recent levels. Much of the current movement of supplies is against contract specifications, new bookings being on a moderate scale. Values are on a strong basis pretty well throughout the range. There has been little movement of prices in the by-products market. Pitch, xylol, and pyridine are only in moderate demand, but most other classes are being taken up well.

GLASGOW.—The general day-to-day transactions in the Scottish heavy chemical trade maintain their steady tendency. Inquiries for export are very quiet. Prices remain extremely firm at previous levels.

Price Changes

Aluminium Sulphate.—£10 5s. to £11 5s. per ton, d/d.
Bleaching Powder.—Spot, 35/37%, £11 to £11 10s. per ton, in casks. Special terms for contract.
Chrometan.—Crystals, 5½d. per lb.; liquor, £24 10s. per ton d/d station in drums.
Copper Sulphate.—About £31 per ton, f.o.b.
Lead, Red.—English, 5/10 cwt., £44 10s.; 1 cwt. to 1 ton, £44 5s.; 1/2 tons, £44; 2/5 tons, £43 10s.; 5/20 tons, £43; 20/100 tons, £42 10s.; over 100 tons, £42 per ton, less 2½ per cent., carriage paid; non-setting red lead, 10s. per ton dearer in each case.
Naphtha.—Solvent, 90/160, 2s. 5d. to 2s. 9d. per gal.; heavy, 90/190, 1s. 10d., naked at works.
Potash, Caustic.—Basic price for 50-100 ton lots. Solid, 88/92%, commercial grade, £55 7s. 6d. per ton, c.i.f., U.K. Liquid, d/d, £35 per ton.
Potassium Carbonate.—Basic prices for 50-100 ton lots. Calcined, 98/100%, £52 10s. per ton, c.i.f., U.K. port. Ex warehouse, £55 5s. per ton.
Potassium Chlorate.—Imported powder and crystals, nominal.
Pyridine.—90/140, 18s. per gal.; 90/160, 13s. 6d.
Soda, Caustic.—Solid, 76/77%; spot, £15 7s. 6d. per ton d/d station.
Sodium Hyposulphite.—Pea crystals, £20 per ton for 2-ton lots; commercial, £14 15s. per ton; photographic, £21 per ton.
Sodium Phosphate.—Di-sodium, £23 to £28 per ton d/d for ton lots. Tri-sodium, £25 to £30 per ton d/d for ton lots.
Sodium Silicate.—£9 10s. to £10 12s. 6d. per ton.
Sodium Sulphite.—Anhydrous, £29 10s. per ton; pea crystals, £20 10s. per ton, d/d station in kegs; commercial, £12 to £14 per ton d/d station in bags.
Sulphur.—Ground crude, £14 10s. per ton d/d; ungraded, £16 15s. per ton.
Tin Oxide.—Snow white, 305s. per cwt.
Xylol.—Commercial, 3s. 3d. per gal.; pure, 3s. 6d.

General News

The address of the Chemical Workers Union (secretary, Mr. Arthur J. Gillian), is now, Dalton House, 155 Kennington Park Road, London, S.E.11, Tel.: RELiance 3938.

During the twelve months ended January 30, 192 Fellowes of the Institute of Chemistry have been elected, of whom 82 were formerly Associates, and one Fellow has been re-elected. New Associates number 352.

It has now been decided by the Customs and Excise authorities that naphthalene blocks of the type used solely as deodorisers or air cleansers are not chargeable with purchase tax. Personal deodorisers remain chargeable as toilet preparations.

"The Precious Metals," the 24th Streatfield Memorial Lecture, delivered before the Institute of Chemistry by H. Gordon Dale, F.I.C., last November, has now been published by the Institute.

The Control of Rubber (No. 7) Order, 1942, which came into force on February 25, enforces economy in the use of rubber in the manufacture of footwear. The use of zinc oxide and lithopone in the production of rubber footwear is controlled and that of lamp black and titanium oxide prohibited. The Order does not apply to soles, heels, and sheet soles produced by moulded or pressure process.

While the publication of a complete catalogue of B.D.H. Laboratory Chemicals is unlikely this year, the British Drug Houses, Ltd., issue lists of price alterations from time to time. Prices in these lists are, naturally, without engagement, as fluctuations frequently occur owing to war conditions. On each list the urgency of economy in laboratory chemicals is stressed, as production adequate to meet all demands is handicapped by the scarcity of raw materials and many other factors.

The Bristol Engineering Manufacturers' Association has published a new edition of the Bristol Engineering Directory, a handy and comprehensive booklet containing, as usual, a classified trades list and an alphabetical list of firms, as well as other useful features. Members of the Association are by no means restricted to the West of England, and every branch of engineering is catered for. A copy may be obtained for 9d., post free, from Mr. J. E. Evans, 104 Filton Avenue, Bristol, 7.

Sugar-using manufacturers of certain classified products operating in parts of Northern, Central, and Eastern England, are at present receiving half their sugar allocations in the form of industrial-grade sugar. The Ministry of Food desires to increase the proportion of industrial-grade sugar allocated to such manufacturers, and is prepared, until further notice, to allow an additional rebate of 3d. per cwt. on quantities taken by manufacturers during the period starting March 9, in excess of 50 per cent. of their total allocations of sugar in any permit period. Details of the arrangement and the procedure for claiming rebate will be notified to manufacturers by their Associations.

Foreign News

The 103rd meeting of the American Chemical Society is to be held at Memphis, Tennessee, on April 20-24.

Deposits of rock phosphate at Ashford and Gulgong, New South Wales, are to be developed immediately by the Australian Ministry of Commerce, if they are of sufficient quality, in order to replace imports from Nauru and Ocean Islands, which are now in a highly vulnerable position.

A new flexible transparent tubing made of a vinylidene chloride plastic called "Saran" has been developed by the Dow Chemical Company in the United States. The company claims that it may be used as a substitute for copper and other metals in a number of industrial applications.

German manufacturers of beef extracts and the like are now using their plant chiefly for the production of yeast products from brewers' waste. Plans for the use of this material for large-scale manufacture of children's food had to be postponed owing to the use of the yeast for other "equally important" purposes, but a certain amount of brewery yeast is absorbed by manufacturers of special foods for army use in Germany.

From Week to Week

A new plant is being erected at Tonawanda, Buffalo, U.S.A., by the Exolon Company, of Blasdell, N.Y., manufacturers of silicon carbide abrasives, refractories, etc., at an estimated cost of \$500,000.

The National Lead Company of New York has purchased 4000 acres of land in the Adirondacks on which they will mine ilmenite. Production is expected to be well in hand by next summer, and the company estimates that the deposit will yield enough ilmenite to supply the whole U.S. titanium products industry for the next ten years.

The O.P.M. (Office of Production Management) has extended to June 30, 1942, the Order which provides for the control and allocation of tungsten metal powder, ferro-tungsten and tungsten compounds. A zinc order requires all producers to set aside a percentage of the metallic zinc, zinc oxide and zinc dust produced each month for distribution, under the direction of the Director of Priorities, and further provides for allocation or controlled distribution of the remainder.

Construction work for the new plant of the North-West Magnesite Company of Pittsburgh, Pa., is under way at Cape May Point, N.J. The company has acquired the rights in the United States to produce synthetic magnesite for refractory purposes by the Chesny process. The process, which was developed in England by Dr. H. H. Chesny, consists essentially in replacing the lime content of calcined dolomite rock by magnesia through reaction with sea water.

Laboratory experiments with synthetic rubber in Sweden have been carried out at the Svendsberg Institute of Uppsala and by several private companies including Fosfatbolaget, Mo & Domsjö, and Asea. Now the Industrial Commission has recommended a Government grant of 25,000 kroner to stimulate research. It is believed that a product of the chlorobutadiene type would be most suitable for manufacture in Sweden. Negotiations for the purchase of foreign licences have been undertaken.

Arrangements have been completed in America for manufacturing alcohol, for use in smokeless powder, from surplus corn, some 10 million bushels of which have been set aside for the purpose, and a similar quantity held in reserve for possible future use. Another scheme for the production of alcohol from agricultural produce is the sponsoring by the U.S. Department of Agriculture of a \$1,000,000 research project at Peoria, Ill., to devise a method for producing alcohol cheaply and in sufficient quantity from sweet potatoes and kindred farm products.

Thousands of tons of fertilisers, especially nitrates, are imported annually into the Canary Islands, and negotiations are said to be under way to obtain a limited quantity of ammonium nitrate and sodium nitrate from Chile, without which the 1942 crops will suffer greatly. Recent statistics are not available, but in 1934 the following amounts of fertilisers were imported into the islands (Spanish figures in metric tons): potash fertilisers, 7113; sodium nitrate, 339; synthetic nitrates, 1145; ammonium sulphate, 22,578; superphosphates, 16,508 tons.

As a result of a grave shortage of natural gas in South-Western Ontario, efforts are to be made to proceed with construction of water-gas plants to be operated by fuel oil, but the federal authority required for the comfort and use of this oil has so far not been granted. Propane is utilised in plants constructed by the Dominion Natural Gas Company, Brantford, and the United Gas and Fuel Company, Hamilton, but a recent order of the Ontario fuel controller directs that war industries be given priority for natural gas requirements, and other users restricted.

The marked gain in production of zinc dust in the U.S.A. in October makes even more pronounced the indication that the 1941 output will exceed that in any previous year, states the Bureau of Mines. Reported production from ten plants has risen from 4,011,534 lb. of zinc dust in May to 4,607,458 lb. in October. Of the latter quantity, 1,437,200 lb. was utilised in the production of sodium hydrosulphite, 432,665 lb. in dyeing and printing textiles, and 220,000 lb. in cadmium production. The November figures show a decline of 6 per cent. in total production of zinc dust, the aggregate being 4,325,406 lb.

Forthcoming Events

The annual general meeting of the **Institute of Chemistry** will be held at 90 Russell Square, W.C.1, on **March 2**, at 3 p.m., when the new officers and members of Council for the ensuing year will take office.

The London Section of the **Society of Chemical Industry** announce that the 7th meeting of the session will be held in the rooms of the Chemical Society, Burlington House, W.1, on **March 2**, at 2.15 p.m., when Mr. E. Downs, M.Sc., A.M.I.E.E., F.I.C., will present a paper on "Gold and its Scope in Industry."

The Birmingham Section of the **Electrodepositors' Technical Society** will meet at the James Watt Memorial Institute, Great Charles Street, on **March 3**, at 5.15 p.m., when a paper on "Anodising in War-Time (with special reference to the Sulphuric Acid Process)" will be read by Mr. A. W. Wallbank. A meeting of the London Section will be held at the Northampton Polytechnic on **March 9**, at 5.30 p.m., when Mr. W. F. Jesson will present a paper on "Solvent Economy in Trichlorethylene Degreasing Paints."

A joint meeting of the Plastics Group and the Glasgow Section of the **Society of Chemical Industry** will be held at the Royal Technical College, Glasgow, on **March 6**, at 7.15 p.m., when Mr. J. Idris Jones will present a paper on "Plastics from Acetylene."

The annual general meeting of the **Society of Public Analysts and other Analytical Chemists** will be held at 4 p.m. on **March 6**, at the Chemical Society's Rooms, Burlington House, W.1. The meeting will be followed, at 4.45 p.m., by a lecture on "Entomology of Commerce," by Professor J. W. Munro, M.A., D.Sc.

The **Birmingham Paint, Lacquer and Varnish Club** is holding a meeting at the Grand Hotel, Birmingham, on **March 7**, in the afternoon, when Mr. Leadbeater will read a paper on "Colours for the Pottery Industry."

A joint meeting of the **Chemical Engineering Group** (Society of Chemical Industry) and the **Institution of Chemical Engineers** will be held on **March 10**, at 2.30 p.m., in the Rooms of the Geological Society, Burlington House, Piccadilly, W.1, when a paper on "Noise and its Suppression" will be presented by Mr. N. Fleming, M.A., of the National Physical Laboratory.

A meeting of the **Pharmaceutical Society** will be held in the Society's House, on **March 12**, at 2.30 p.m., when six short technical papers will be read.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

LANGLEY ALLOYS, LTD. (Bucks.). (M., 28/2/42.) February 7, mortgage to Swiss Bank Corporation securing £1320 and any further advances; charged on certain machinery. *£65,000 (floating charge). July 14, 1941.

W. P. BUTTERFIELD, LTD., Shipley, galvanisers and tank makers. (M., 28/2/42.) February 6, £700 mortgage to Bradford Third Equitable Benefit Building Society; charged on Thorndyke, Menston Lane, Burley-in-Wharfedale. *£116,173. November 27, 1941.

Company News

Peter Brotherhood, Ltd., have declared an interim dividend of 8 per cent. (same).

Aspro, Ltd., have, for the seventh successive year, declared an interim dividend of 10 per cent., less tax.

A.B. Svenska Metallverken report a net profit of Kr. 1,180,000 (Kr.1,330,000), and have declared a dividend of 8 per cent. (same).

Wembley Anodising, Ltd., 14 Finsbury Circus, E.C.2, announce that the name of the firm has been changed to Worcester Plating Company, Ltd., as from February 10.

Dorman Long and Co., Ltd., announce trading profits of £1,189,378 (£1,395,029). The directors recommend dividends only on the 6½ per cent. first and 8 per cent. second preference shares, the dividend on the ordinary being passed.

International Paint and Compositions, Ltd., announce profit for the year ended December 31, after providing for income tax and depreciation, but before charging E.P.T. of £214,181 (£208,145), and have declared a final dividend of 16 per cent., making 20 per cent. for the year (same).

Chemical and Allied Stocks and Shares

THERE has been little change in conditions ruling in Stock

Exchange markets, where the volume of business in most sections remained very small. Sentiment benefited from the Cabinet changes, and also from the upward trend in British Funds, but at the time of writing the prevailing tendency has been to await the next war developments. Business centred mainly on high-class investment stocks, but selling of industrial equity shares was again very moderate, and in some directions small gains were recorded on balance. Dividend announcements that have come to hand at the time of writing have created a satisfactory impression, including the maintenance of the distribution of Borax Consolidated at 7½ per cent. The deferred units of the last-named company remained firmly held, and at 29s. 4½d. were virtually unchanged on balance. Imperial Chemical are 32s. 4½d. at the time of writing, which compares with 32s. 6d. a week ago, and the 7 per cent. preference were 34s. 6d. Elsewhere, Associated Cement moved down to 47s. 6d., but later recovered to 48s. 9d., awaiting the financial results, due next month. There were again rather more dealings in Cooper, McDougall and Robertson, which were maintained at 24s. 4½d.; the dividend decision falls to be announced shortly. Elsewhere, B. Laporte were inactive, but were firmly held and quoted at 63s. 9d. British Drug Houses were around 25s.

In other directions, Lever and Unilever reacted further from 27s. 6d. to 26s. 6d., and Dunlop Rubber to 25s. 6d., while other shares of companies with interests in the Far East remained reactionary, but there was little selling reported. Elsewhere, at the time of writing, United Molasses have eased from 30s. 3d. to 29s. 9d. At 74s. 3d. the units of the Distillers Co. were also within 6d. of the price ruling a week ago. Monsanto Chemicals 5½ per cent. preference remained around 22s. 6d., and Greeff-Chemicals 5s. units were 5s. 6d. Erinoid 5s. ordinary were 7s. 9d., and although inactive, remained firmly held, while British Industrial Plastics 2s. shares continued to be quoted around 3s. 3d. A moderate amount of buying of British Plaster Board 5s. ordinary was reported; they were 21s. at one time, but improved to 21s. 6d.

Movements in iron and steel issues were moderate; at the time of writing, Babcock and Wilcox are 43s. 3d., Tube Investments 85s., Dorman Long 20s. 3d., and United Steel 22s. 4½d. Firth and John Brown ordinary shares were inactive, awaiting the forthcoming financial results, but continued to be quoted at 60s. Triplex Glass were reactionary, having moved back to 30s. 3d. at the time of writing; but United Glass Bottle were unchanged at 55s. awaiting the preliminary statement for the past year's working. Canning Town Glass 5s. ordinary transferred at 5s. 3d. At 69s. Turner and Newall were higher on balance, while Nairn and Greenwich were maintained at 57s. 6d., although elsewhere, Barry and Staines went back from 33s. 9d. to 33s. International Paint were at the rather lower level of 91s. 3d., but the quotation does not appear to have been tested by much business since the announcement of improved profits for the past year, and the maintenance of the dividend at 20 per cent. Lawes Chemical 10s. ordinary were around 8s. There were a number of dealings in British Match ordinary, which were quoted at 35s. 6d. Awaiting the results, British Aluminium had an easier appearance at 44s., but British Oxygen were reported to be firmer at 67s. 6d. Metal Box ordinary were firm at 73s. 9d.

Among other securities, Boots Drug were higher at 32s., and Beechams Pills deferred shares 9s. 10½d., while Sangers were 17s. and Timothy Whites 18s. "Shell" and Burmah Oil declined further on balance, under the influence of the Far Eastern position. Shares of oil companies whose properties are outside the war areas, such as Trinidad Leaseholds, were inclined to be firmer.

Transport of Bromine

Space-Saving Method Adopted in Germany

TO reduce the weight of containers for liquid bromine, a new method to replace bulky and expensive glass containers or iron drums has been patented in Germany (Ger. P. 694,408). It is claimed that by transforming the bromine into a solid molecular compound it can be transported as a solid in metal containers, which reduces packing weight by nine-tenths. The containers are of light sheet iron coated with lead. Bromine is added in the barrel to tetramethyl-ammonium bromide to form a solid molecular compound in which 93 per cent. of the mass represents bromine. The containers are provided with openings and the bromine is introduced by tubes. When it is desired to remove the bromine, hot air or steam is injected, and at 40° C. the bromine melts and can be withdrawn, leaving the tetramethyl-ammonium bromide, which can be used again. If desired, the mixture can also be used directly as a whole, for instance, by adding silver nitrate to form silver bromide.

GERMAN POTASH SALES DROP

Sales of potash salts and by-products by the German Potash Syndicate in 1941 did not reach the 1940 figures, but it is reported officially that they were not much lower. The year 1940 was a very bad year from the point of view of the German potash producers, because not only were overseas shipments impossible owing to the blockade, but sales in the Danish, Dutch, and Belgian markets which, thanks to the intensive methods employed in agriculture in these countries, normally absorb large quantities of potash salts, also suffered from the war. Attempts have been made by the Syndicate to offset the loss of overseas markets by larger deliveries to the Balkan countries, and various means of assistance have been employed by the local administrations in these States to enable peasants there to buy more fertilisers. These efforts have been supported by the German authorities, who wish to obtain more food from the Balkans. As, however, potash sales in general have not increased, it must be assumed that these measures have met with little success so far.

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Dyestuffs Advisory Committee

Wide Technical Field Covered

THE Technical Advisory Committee appointed by the Society of Dyers and Colourists from within its membership last December is now in full activity. In the past, the Society has carried out its work by appointing appropriate technical committees of a temporary nature but, in view of the rapidly changing conditions in industry arising from the progress of the war, it has been felt by the Council of the Society that it is essential to appoint a comprehensive and permanent committee as a means of bringing the accumulated knowledge and experience of the Society's membership to bear on all matters within its purview and so enabling it to play an effective part in the prosecution of the war. Its services in a consultative capacity are at the disposal of the industry; its policy is solely constructive and in no way obstructive.

The 55 members of the committee comprise representatives of the dye-making, dye-using, and allied industries, as well as of academic and research organisations, so that their combined experience covers a wide field and will enable valuable advice to be given on the scientific and technical aspects of the subjects under the following general headings: (1) water supplies and treatment; (2) general chemicals, including auxiliary agents; (3) raw materials, intermediates and colouring matters; (4) chemistry and physics of fibres, fibrous materials and plastics; (5) preparatory and finishing processes; (6) dyeing and printing; and (7) testing and standardisation.

The committee will function by means of comparatively small panels (with powers to co-opt where necessary) selected from its membership according to the nature of the particular problem on which the panel is required to report.

Co-operation with similar committees appointed by other bodies, in cases concerning subjects in which they may be as interested as the Society of Dyers and Colourists, will be welcomed.

A letter was recently sent to various Government departments, particularly those Ministries and Controls concerned with the welfare of the dyestuffs industries, inviting them to indicate ways in which the Technical Advisory Committee might be of service to them.

Canadian and U.S. Committees

It is interesting to recall that a similar advisory committee was appointed in Canada towards the end of last year, with the aim of advising the Controller of Chemicals on the supply and distribution of dyestuffs, particularly as related to the war effort.

As we go to Press, news has come to hand of yet another advisory committee on dyestuffs, this time appointed by the Textile Color Card Association of the U.S.A. It is composed of representatives of leading American dyestuff producers and will fulfil the same functions as the British and Canadian Committees.

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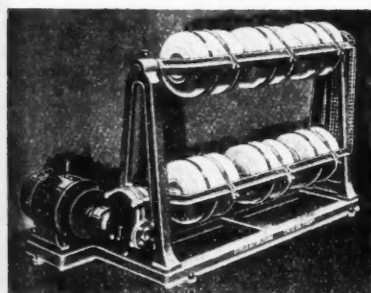
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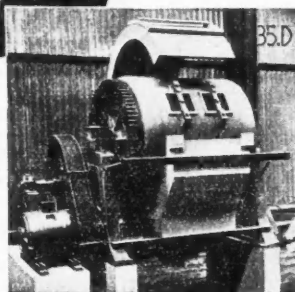
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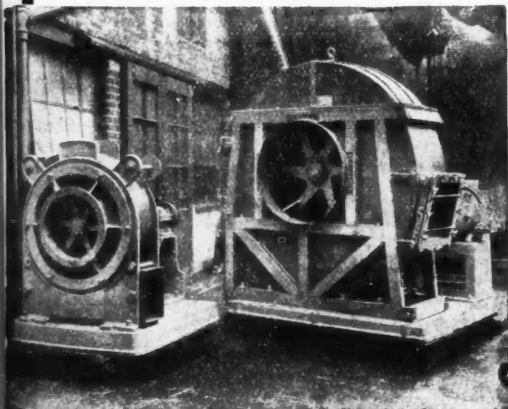
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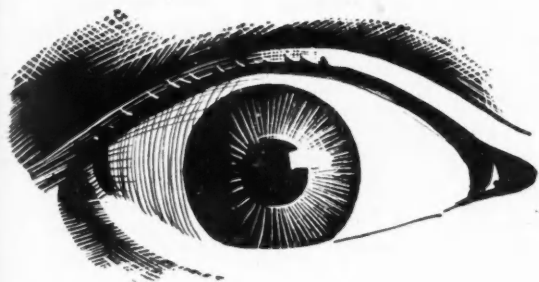
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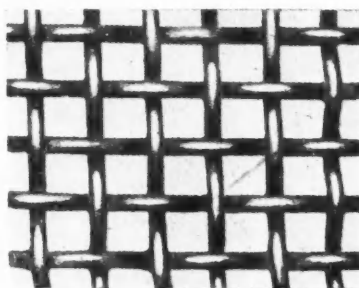
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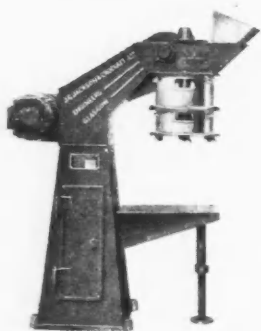


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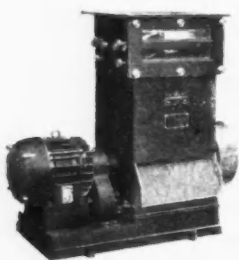
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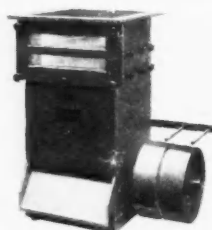
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